

# PROGRAM

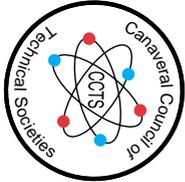
## 35TH SPACE CONGRESS

HORIZONS UNLIMITED

Cocoa Beach, Florida  
April 28 - May 1, 1998



**Thirty-Fifth Space Congress**  
Post Office Box 245  
Cape Canaveral, FL 32920-0245



NONPROFIT  
ORGANIZATION  
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## Chairman's Message

Every Space Congress has made its unique presence felt along the Space Coast. This year will be no different when we celebrate the 35th installment of the oldest forum of its kind and the 40th anniversary of NASA, the agency that made it all possible.

Our theme this year, "**Horizons Unlimited**", is extremely appropriate when we consider the extraordinary scientific achievements reached during the last eighteen months and the imminent launch of the first elements of the International Space Station. We are truly at the beginning of a new era of space exploration, exploitation and discovery, with our horizons limited only by our imaginations.

Not since American astronauts landed on the moon 29 years ago, has the world been treated firsthand to the wonders of space exploration as it was on July 4, 1997. Around the globe people watched their televisions and were enthralled as a gutsy piece of manmade machinery and electronics landed on Mars and almost instantaneously shot back images to Earth. As if that wasn't enough, millions of people monitored the Rover's whereabouts, on-line, at web sites, created by commercial ventures as well as NASA's Jet Propulsion Lab scientists. These achievements were followed by the Global Surveyor that will orbit the Red Planet and map its surface for the next two years. Some of those resourceful, brilliant scientists will be here to relate their experiences firsthand to Congress participants.

While there has been some debate about whether we should continue to share our knowledge and our astronauts with the Russians and their Mir station, our astronauts and their cosmonauts have used their resourcefulness and ingenuity to keep the aging station operational. No one accepts equipment malfunctions as "nominal" operations but the lessons we have learned on Mir are vital to a successful International Space Station project and will be instrumental to our future journeys throughout the solar system. Astronauts, and perhaps cosmonauts, will be here to discuss their experiences and why the U.S.-Russian partnership is essential.

In addition, there will be panels and paper sessions addressing the growing demand for the commercial use of unmanned vehicles and the sophisticated constellations of communications satellites. There will also be discussions about the future of reusable launch vehicles, the trends in military payloads and launch vehicles, and the benefits education and our day-to-day lives receive from the various space programs. As in the past, we will continue to have the popular exhibits hall, science fair and Meet the Astronauts panel.

The **35th Space Congress** is sponsored by the Canaveral Council of Technical Societies (CCTS) and supported by the National Aeronautics and Space Administration (NASA) and the Department of Defense (DoD). In addition, local citizens and aerospace contractors are involved in planning and organizing this conference.

The Space Congress committee and I welcome you the scientists, engineers, educators, aerospace and defense industry experts and the space enthusiasts, whose achievements and support keep expanding the envelope of our "**Horizons Unlimited.**"



A handwritten signature in cursive script that reads "Bruce Melnick". The signature is written in dark ink on a white background.

**Bruce Melnick**  
General Chairman  
35th Space Congress

# Information

## Headquarters/Registration

Headquarters for the **Thirty-Fifth Space Congress** is the Howard Johnson Plaza-Hotel, Skylab Room. There you may pick up your registration packages and other Space Congress materials including copies of the Proceedings, tickets for Panel/Paper sessions, exhibit reception, luncheons and the banquet. Space Congress memorabilia and the various tickets are also available at the registration satellite desk in the hotel lobby. Registration will be open from 12:00 - 5:00 p.m. on Monday April 27, 7:00 a.m. - 5:00 p.m. from Tuesday through Thursday and 7:00 a.m. - 12:00 on Friday.

PACKAGE REGISTRATION .....	\$125.00
(Includes first five items listed below)	
Registration .....	50.00
Tuesday Luncheon .....	20.00
Tuesday Banquet .....	40.00
Wednesday Luncheon .....	20.00
Wednesday Exhibit Reception .....	15.00
Proceedings Hard Copy (Not in Package) .....	75.00
Proceedings CD-Rom (Not in Package) .....	35.00
Golf (Not in Package) .....	40.00

## ALL PANEL AND PAPER SESSIONS WILL BE HELD AT THE HOWARD JOHNSON PLAZA-HOTEL. THE BANQUET WILL BE HELD THIS YEAR AT THE RADISSON AT THE PORT.

Package registration will save you money; however, each item may be purchased individually at the listed price. Telephone contact can be made through the Howard Johnson Plaza-Hotel, (407) 783-9222 (ask for Skylab Room) or directly by calling (407) 868-2147.

## Press Room

The press facility is located in Room 202 and 204 of the Howard Johnson Plaza-Hotel. The press facility is open from 12 noon to 5:00 p.m. on Monday and from 8:00 a.m. to 5:00 p.m. on Tuesday, Wednesday and Thursday and 8:00 a.m. to noon on Friday. The telephone numbers for the press facility are (407) 784-0260, (407) 784-6913, (407) 784-6455, (fax: (407) 784-0890).

## Message/Locator Assistance

The sponsoring organization, the Canaveral Council of Technical Societies (CCTS), maintains an office with telephone (407) 868-1623 and fax (407) 783-5579 for the convenience of Space Congress participants. It also assists attendees by maintaining a message board. Registrants who wish to leave lodging and local phone information can do so by turning in locator forms, available at the Registration Desk, to the CCTS Message/Locator Desk located in the Titan Board Room, Howard Johnson Plaza-Hotel.

## Proceedings

The proceedings of the **Thirty-Fifth Space Congress** are available at the registration desk in the Skylab Room, Howard Johnson Plaza-Hotel during the Space Congress. After the close of the Space Congress, additional proceedings can be purchased for \$75 each for hard copy, and \$35 each for CD-Rom plus postage from Secretary, CCTS, Post Office Box 245, Cape Canaveral, Florida 32920.

## Exhibits

Exhibits will include a Showcase Exhibit, computer graphics demonstrations and displays of the Space Shuttle, Shuttle Payloads, Space Station, Expendable Launch Vehicles, and other space related activi-

ties. The Exhibit Halls will be open to the public in the Cocoa Beach Hilton and the Comfort Inn & Suite Resort on the following schedules: Tuesday - 11:00 a.m. to 7:00 p.m.; Wednesday - 11:00 a.m. to 5:00 p.m.; and Thursday - 9:00 a.m. to 3:00 p.m. The Hab Lab Exhibit at the Cocoa Beach Hilton, is open to the public as follows: Tuesday 9:00 a.m. to 7:00 p.m. Wednesday 9:00 a.m. to 8:00 p.m. and Thursday 9:00 a.m. to 3:00 p.m. Space Congress memorabilia is available for purchase at the exhibit areas. Admission tickets are available at the Registration Desk for the Wednesday Exhibit Reception to be held from 6:00 - 8:00 p.m.

## Exhibitors

Allied Signal Technical Services Corporation  
Analytical Graphics, Inc.  
AJT & Associates  
Analex Corporation  
Alliant Techsystems  
The Boeing Company  
Brevarad Community College  
Brown and Root Service Corporation  
Canaveral Council of Technical Societies  
Canaveral Port Authority  
Cincinnati Electronics Corporation  
Communications Concepts, Inc.  
Computer Sciences Raytheon  
Delaware North Parks Services, Inc.  
Delta  
Dynacs  
Dynamic Engineering  
EG&G Florida, Inc.  
Emery Riddle Aeronautical University  
Florida Tech  
GRCI, Inc.  
Hubble Space Telescope  
International Space Station  
ITT Federal Services  
Jet Propulsion Laboratory  
Johnson Controls, Inc.  
Krieger Publishing Co., Inc.  
KSC Center of Excellence  
Litton PRC  
Lockheed Martin Space Mission Systems and Services  
Lockheed Martin Michoud Space Systems  
Lockheed Martin Astronautics  
NASA Goddard Space Flight Center  
NASA Johnson Space Center  
NASA Kennedy Space Center  
Naval Research Laboratory  
Omitron, Inc.  
Orbital Science Corporation  
Phase I Technology Corporation  
Raytheon Systems Company  
Research Triangle Institute  
Sentel Corporation  
Sherikon Space Systems, Inc.  
Shuttle Mir Program  
Spacehab, Inc.  
Swales Aerospace  
Thiokol Corporation  
TSI Telses  
United Space Alliance  
University of Central Florida - Brevard  
United Technologies Corporation, USBI Company

Wang Global  
Webster University  
Xerox Corporation

### Youth Science Fair

Regional Youth Science Fair displays and demonstrations will be open to the public Tuesday through Thursday, in the Dolphin Room at the Holiday Inn. Exhibits will be judged and awards presented on Thursday evening, April 30, immediately preceding the "Meet the Astronauts" panel session.

### Pioneers' Annual Banquet

The Pioneers' Banquet '98 will be held on Friday, May 1, at the Officers' Club, Patrick Air Force Base.

*Social Hour:* 6:30 p.m.

*Dinner:* 7:30 p.m.

*Speaker:* 8:30 p.m. - Richard K. Jacobson  
Former CEO & Chairman  
Spacehab, Inc.

Registration is April 28, 29 and 30 in the Titan Board Room, Howard Johnson Plaza-Hotel, Cocoa Beach, and 5:30 to 6:30 p.m. at the Officers' Club on May 1.

### Space Congress Golf Tournament

Golfers will be able to enjoy a tournament at the Patrick AFB Course on Friday, May 1.

The tournament will be a "scramble" format, as in the past. You may sign up with one partner or by yourself. The tournament committee will assign teams based on playing ability. Foursomes may sign up if they provide a combined total certifiable handicap of 55 or higher. Fill in your name and average score or handicap for 18 holes on the registration form, along with the same from your partner, and enclose \$40.00 for each person. A maximum of 144 players will be registered on a first come, first in basis. Lunch, refreshments on the course, green fees, carts, and trophies are included in the fee. Buffet lunch from 11:30 a.m., and shotgun start at 1:00 p.m. Maps are available at the Golf Registration Desk in the Skylab Room of the Howard Johnson Plaza-Hotel. Registration name change will be permitted with notification up to April 29.

### Canaveral Council of Technical Societies

#### CCTS Member Societies:

AACE International  
Air Force Association (Cape Canaveral Chapter)  
American Institute of Aeronautics & Astronautics  
American Institute of Chemical Engineers  
American Meteorological Society  
American Society of Civil Engineers  
American Society of Heating, Refrig. & A/C Engineers  
American Society for Industrial Security  
American Society of Mechanical Engineers  
American Society for Quality  
American Society of Safety Engineers  
American Society for Training and Development  
Armed Forces Communication Electronics Association  
Florida Engineering Society  
Human Factors and Ergonomics Society  
Institute of Electrical & Electronic Engineers (Melbourne and Canaveral Sections)  
International Council on Systems Engineering

Missile, Space & Range Pioneers, Inc.  
NASA Alumni League  
National Contract Management Association  
National Space Club: Florida Committee  
Society for Technical Communication  
Society of American Military Engineers  
Society of Logistics Engineers  
Society of Manufacturing Engineers  
Society of Women Engineers

#### Associate Members:

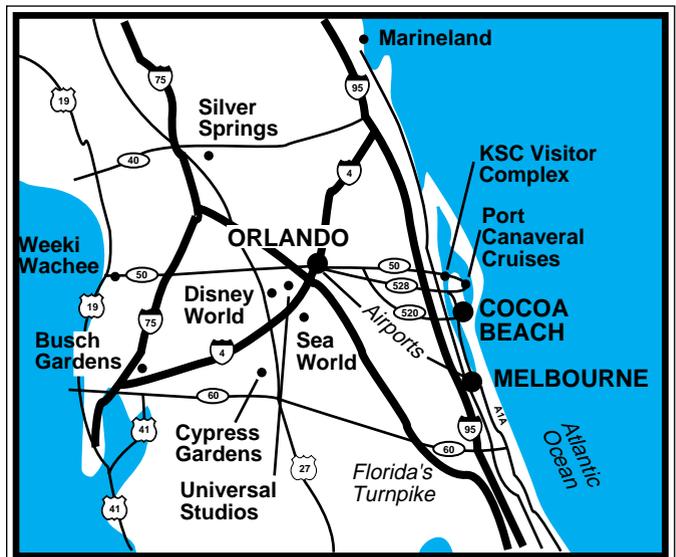
Association for Quality and Participation  
National Management Association, Florida Space Coast Council  
USAF Space & Missile Museum Foundation

Many of the societies will have educational/promotional brochures/information on display at the CCTS Desk at the Howard Johnson Plaza-Hotel, Titan Board Room, Comfort Inn and Suites Resort, and the Hilton Exhibit Center. Attendees are invited to stop by and review this material.

### Attraction Centers

Late April in Florida is a delightful time of year for the entire family. The weather is pleasant, the hardy find the Atlantic warm enough for swimming and tourist attractions are not yet crowded. **Cocoa Beach** offers a long stretch of swimming beach, surfing areas, and both deep-sea and shore fishing. Three and four-day cruises aboard the **Dolphin IV**, **SS Oceanic**, the **SS Atlantic** or the **Fantasy** can be enjoyed from Port Canaveral. Bus tours of the **Kennedy Space Center** and **Cape Canaveral Air Station** are available from the **Kennedy Space Center Visitor Complex** where a free exhibit-filled space museum can be enjoyed by both children and adults.

Within one to two hours drive is a world of vacation fun at **Walt Disney World** in the **Magic Kingdom**, **Epcot Center**, **Disney/MGM Studios** - **Universal Studios, Florida** - **Sea World**, one of America's finest marine attractions - the mystery and excitement of Africa in **Busch Gardens** - famed Glass Bottom boats at **Silver Springs** - or the beautiful gardens and daily water ski revue at **Cypress Gardens**.



# Program

**TUESDAY, APRIL 28**

**KEYNOTE ADDRESS (8:00 a.m. to 8:30 a.m.)**

**Howard Johnson Plaza-Hotel**

*Introductions:* Bruce Melnick, General Chairman

*Speaker:* John W. Young, Astronaut  
Chief, Space Shuttle Branch

Among Mr. Young's numerous accomplishments are the first flight on the first manned Gemini mission, Gemini 3, March 23, 1965. On Apollo 10, Mr. Young was Command Module Pilot, completing a lunar rendezvous and orbiting the moon May 18 - 26, 1969. Following that flight, he performed three EVAs for the Apollo 16 mission, April 16-27, 1972. He commanded the first flight of the Space Shuttle Columbia (STS-1) on April 12 - 14, 1981 and in 1983 was Spacecraft Commander flying the first Spacelab mission, STS-9.



Mr. Young was chosen as Chief of the Space Shuttle Branch of the Astronaut Office in January, 1973. This office provides operational and engineering astronaut support for the design and development of the Space Shuttle. The following year, Mr. Young was responsible for the coordination, scheduling and control of activities of the astronauts as Chief of the Astronaut Office, a position he held until May, 1987. At present, Mr. Young is the associate director responsible for technical, operational and safety of all agency programs and activities assigned to the Johnson Space Center.

Prior to joining NASA, Mr. Young served in the Navy. He was assigned to Fighter Squadron 103 for four years and was subsequently assigned to the Naval Air Test Center during which time he set world time-to-climb records to 3,000-meter and 25,000-meter altitudes in the Phantom. After 25 years of service, he retired as a captain.

During his Navy and NASA careers he has received numerous awards, including four honorary doctorate degrees. His awards include the Congressional Space Medal of Honor, NASA Distinguished Service Medals, three Navy Distinguished Flying Crosses and the American Astronautical Society Space Flight Award.

Mr. Young is married and the father of two children and two grandchildren.

**PANEL SESSION I (8:30 a.m. to 11:00 a.m.)**

**Howard Johnson Plaza-Hotel**

**VISION OF SPACE STATION OPERATIONS AND UTILIZATION**

*Panel Chairman:* Dr. John David F. Bartoe  
Manager for International Space Station

*Panel Members:*  
Kevin Chilton  
Tony Butina

Mike Suffredini  
James Thorton  
Doug C. Stone  
Jim Buchil

**EXHIBITS (11:00 a.m. to 7:00 p.m.)**

**Cocoa Beach Hilton, Comfort Inn & Suite Resort**

**SCIENCE FAIR**

**Holiday Inn, Dolphin Room**

**HAB LAB Exhibit (9:00 a.m. to 7:00 p.m.)**

**Cocoa Beach Hilton**

**LUNCHEON (11:30 a.m. to 1:00 p.m.)**

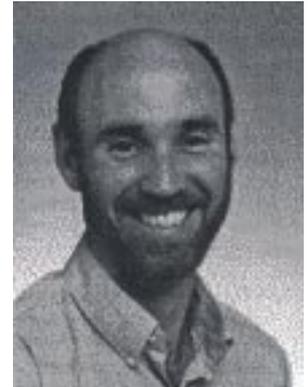
**Holiday Inn, Manatee Ballroom**

*Introductions:* Bruce Melnick, General Chairman

*Speaker:* Brian Muirhead  
Pathfinder Project Manager,  
Jet Propulsion Laboratory

*Topic:* Results of Mars Pathfinder Mission

Brian Muirhead has worked on various spacecraft and technology projects since coming to JPL in 1978. His first job was building flight hardware on the Galileo spacecraft now in orbit around Jupiter. He managed the Advanced Spacecraft Development Group and the Mechanical Systems Integration Section. He has led three of JPL's recent "faster, better, cheaper" developments: the SIR-C Antenna Mechanical System (which flew on STS 59 and 68), the MSTI I Mechanical Subsystems, launched in 1992 and most recently the Mars



Pathfinder flight system which landed successfully on Mars on July 4, 1997. On Mars Pathfinder he was responsible for the design, development, test and launch of the flight system. He is currently the Project Manager for Mars Pathfinder. In addition, he manages the Deep Space 4/Champion Project designing a mission to land on, analyze in situ and return to Earth a sample from a comet. He has a BSME from the University of New Mexico and an MSAE from Cal Tech.

**PAPER SESSION I (2:00 p.m. to 5:00 p.m.)**

**A. SCIENTIFIC ENLIGHTENMENT  
Howard Johnson Plaza-Hotel**

*Session Chairman:* Roy C. Tharpe, Manager, Launch Site Management Office, The Boeing Company

*Session Organizer:* Suzanne Cunningham

1. U. S. COMMERCIAL SPACE LAUNCH POLICY IMPLEMENTATION, LESSONS LEARNED FROM 1986-1992

Craig R. Reed

2. NEW SPACE LAUNCH MARKET NEEDS AND MEETING THEM  
Karen Ramos

3. A CASE STUDY IN JOINT FEDERAL AND STATE COOPERATIVE ACTIVITIES IN DEVELOPMENT OF SPACE-RELATED PROGRAMS IN FLORIDA

Roelof L. Schuiling  
Edward A. O'Connor

4. TECHNOLOGY-BASED BUSINESS INCUBATORS AS A MEANS OF COMMERCIALIZATION AND TECHNOLOGY TRANSFER

Kathleen F. Harer

5. FLIGHT OPPORTUNITIES FOR COMMERCIAL UTILIZATION

Kenneth A. Jackson, Sr.  
Bernard A. Harris

6. A STRATEGY FOR IMPLEMENTATION OF INTEGRATED VEHICLE HEALTH MANAGEMENT INTO THE SPACE SHUTTLE PROGRAM

Jack J. Fox

**B. SPACE STATION/MIR REPORT**  
**Howard Johnson Plaza-Hotel**

*Session Chairman:* William V. Bates, Chief of Staff ISS Program Office, Johnson Space Center

*Session Organizer:* Ellen Prince Brown

1. MODELING AS METHODOLOGY: THE USE OF VEHICLE LEVEL CONTROL SYSTEM MODELING FOR THE INTERNATIONAL SPACE STATION (ISS) PROGRAM

Jimmy L. Williams  
Scott C. Haase

2. THE INTERNATIONAL SPACE STATION PARTNERS: BACKGROUND AND CURRENT STATUS

Daniel V. Jacobs

3. CREW TRAINING FOR INTERNATIONAL SPACE STATION: PLANS, CONCEPTS AND ISSUES ON THE EVE OF FIRST ELEMENT LAUNCH

Ven C. Feng

4. REPORT ON THE INTERNATIONAL SPACE STATION'S PLANNING FOR CRITICAL ASSEMBLY PHASE FAILURES

Anthony J. Butina  
William W. Robbins, Jr.

5. ENGINEERING FOR THE ISS LIFETIME

Irene Taylor

6. X-RAY CRYSTALLOGRAPHY FACILITY COMMERCIAL PATH-FINDER FOR SPACE UTILIZATION (IAF PAPER)

William McDonald  
Johanna Lewis  
Craig Smith  
Lawrence DeLucas  
Michael Kearney  
Ken Jackson

7. CONTRACTS VS. COMMERCIALIZATION—THE NEED FOR PRIVATIZATION BY NASA: A PERSPECTIVE ON ISS PLANS FOR COMMERCIALIZATION THROUGH PRIVATIZATION

Sid Clinton

**C. DOD ACHIEVEMENTS**  
**Howard Johnson Plaza-Hotel**

*Session Chairman:* Lt. Col. Robert Wayne Eleazer, III, USAF

*Session Organizer:* Carol Johnson

1. LESSONS LEARNED ESTABLISHING THE TITAN IVB LAUNCH SYSTEM CAPABILITY

Daniel C. McAlister

2. WHAT'S WRONG WITH THE COMMERCIAL SPACE LAUNCH ACT: A LAUNCH BASE PERSPECTIVE

Lt. Col. Robert Wayne Eleazer, III, USAF

3. METEOROLOGICAL SUPPORT TO ASSURE SAFE ACCESS TO SPACE

Lt. Col. R. W. Taylor, USAF

4. 1997 EASTERN RANGE LAUNCH PERFORMANCE

Michael W. Maier

5. SPACE ENVIRONMENTS IMPACTS ON SATELLITE, RADAR AND COMMUNICATIONS SYSTEMS

Maj. Mike Christie, USAF

6. TECHNOLOGICAL ADVANCES AND DEVELOPMENTS IN LOW POWER GALLIUM ARSENIDE FOR SPACE APPLICATIONS

Dr. Charles Cerny  
Capt. K. Merkel, USAF  
R. Bobb  
E. Martinez  
F. Schuermeyer

**D. LEARNING FROM EXPERIENCE**  
**Howard Johnson Plaza-Hotel**

*Session Chairman:* William Evan Lavinghousez, School Board of Brevard County

*Session Organizer:* Dr. Gale Allen/Jane Masconi

1. AN INTERDISCIPLINARY STUDENT PAYLOAD TO PERFORM SPACE BASED REMOTE SENSING AND TO MEASURE MICROGRAVITY AND RADIATION EFFECTS

Andrew Blitz	John D. Bickham
Robert Friedfeld	John Feranda
Rolando Branly	Chris Dahl
Eric Ackerman	Chris Theodorakis
Joseph M. Ritter	

2. INTERNET SCIENCE AND TECHNOLOGY FAIR

Bruce Furino  
Joyanne Craft

3. LEVERAGING SPACE FOR IMPROVED SCIENCE PROGRAMS

Robert Friend

4. A PLAN FOR PHYSICS DEPARTMENTS FOR THE TWENTY-FIRST CENTURY

James D. Patterson, Ph.D.

5. STUDENTS DESCRIBING HOW THEY SEE SPACE BENEFITING THEM

Betty P. Preece

**SPACE CONGRESS BANQUET  
Radisson At The Port**

*Social Hour:* 7:00 p.m.

*Dinner:* 8:00 p.m.

*Program:* 9:00 p.m.

*Introductions:* Bruce Melnick, General Chairman

*Speaker:* C. Michael Foale, Ph.D.

*Topic:* Discussion of the MIR Experience

Dr. Foale, began his career as an astronaut in June 1987, providing verification and testing of shuttle flight software by flying the Shuttle Avionics Integration Laboratory (SAIL) simulator. Assigned as a mission specialist, Dr. Foale flew on STS-45, STS-56 and performed an EVA during STS-63, the first rendezvous with the Russian Space Station Mir. Responsible for the development of crew rescue and integrated operation for International Space Station, he was Board Engineer 2 on Mir 24. Recently, Dr. Foale was appointed assistant director at Johnson Space Center.



Following the launch of STS-84, on May 17, 1997, Dr. Foale joined the crew aboard Mir. During his four months aboard Mir, Dr. Foale conducted various science experiments to help the crew resolve and repair a number of systems' problems. He assisted Commander Anatoly Solovyev in September, 1997 on a six-hour EVA to inspect the damage caused by a Progress re-supply ship that collided with the station during docking. During his astronaut career, Dr. Foale logged more than 160 days in space and 10 1/2 hours of EVA.

Prior to pursuing a career in the U.S. Space Program, Dr. Foale participated in scientific scuba diving projects while he was at Cambridge University where he completed his doctorate in laboratory astrophysics. One of the diving projects involved surveying underwater antiquities in Greece. He also volunteered to dive on the 1543 ocean galleon "The Mary Rose," to learn excavation and survey techniques in very low visibility conditions.

Dr. Foale joined Johnson Space Center in the payload operations area of the Mission Operations Directorate in June, 1983. His primary responsibility as payload officer was payload operations on the Space Shuttle missions, STS-51G, 51-I, 61-B and 61-C. Before joining NASA, Dr. Foale worked on Space Shuttle navigation at McDonnell Douglas Aircraft Corporation

Dr. Foale considers Cambridge, England his home. He is married to the former Rhonda R. Butler of Louisville, KY., and has two children.

**WEDNESDAY, APRIL 29**

**PAPER SESSION II (8:00 a.m. to 11:00 a.m.)**

**A. CURRENT AND FUTURE LAUNCH CAPABILITIES  
Howard Johnson Plaza-Hotel**

*Session Chairman:* Jean-Michel Desobeau, Director of Engineering, Arianespace, Inc.

*Session Organizer:* Craig McAlister

1. HISTORY, STATUS AND FUTURE OF THE COMMERCIAL LAUNCH INDUSTRY

Lee R. Scherer

2. THE BATTLE FOR INFRASTRUCTURE: COMMERCIAL NEEDS OUTSTRIP AVAILABILITY

Dominick R. Barry

3. THE LOCKHEED MARTIN EELV SYSTEM

Alex C. Karras

Steven E. Sasso

4. SPACE TRANSPORTATION AT THE TURNING OF A CENTURY (ARIANE SPACE EXPERIENCES)

Roger Solari

5. LAUNCH INFRASTRUCTURE: FRENCH GUINEA

Gilbert Blondet-Gonte

6. DELTA III: THE COMMERCIAL EVOLUTION OF DELTA

James G. Maser

Michael C. Laker

7. DEVELOPMENT OF DUAL USE LAUNCH FACILITIES ON A NATIONAL RANGE

Albert M. Thomas

8. BOEING SEA LAUNCH UPDATE

Amy L. Buhrig

**B. NASA—ASSESSING PROGRESS  
Howard Johnson Plaza-Hotel**

*Session Chairman:* Frank Cepollina, Project Manager for Hubble

*Session Organizer:* Marilou Richardson

1. OVERVIEW OF THE SECOND SERVICING MISSION AND PLANS FOR FUTURE HST SERVICING

Dr. David Leckrone

2. SCIENTIFIC RESULTS FROM STIS

Dr. Bruce Woodgate

3. SCIENTIFIC RESULTS FROM NICMOS

Dr. Rodger Thompson

4. RECENT SCIENTIFIC RESULTS FROM WFPC2

Dr. John T. Trauger

5. THE ADVANCED CAMERA FOR SURVEYS

Dr. Holland Ford

6. PROSPECTS FOR THE NICMOS CRYOCOOLER

Dr. Ed Cheng

**C. FUTURE ENDEAVORS FOR MILITARY SPACE**

**Howard Johnson Plaza-Hotel**

*Session Chairman:* Major Scott Swanson, USAF, Director of Launch Systems Acquisition and Operations

*Session Organizer:* Frank Aderton

1. DECREASING THE COST OF SPACECRAFT LAUNCH PROCESSING

Capt. John T. Eichner, USAF

2. THE EVOLVED EXPENDABLE LAUNCH VEHICLE (EELV) STANDARD INTERFACE SPECIFICATION FOR SPACE VEHICLE ACCOMMODATIONS

Frank L. Knight

3. COMMAND AND CONTROL THROUGH SPACE-BASED SYSTEMS

Bill Naus  
Chris Bocchino  
Belo Kardos  
Jack Lyle  
Gary Mason  
Coleen Vaccaro  
Bob Velez

4. A SPACE-BASED LASER READINESS DEMONSTRATION COULD DEMONSTRATE A NEW WAY OF OPERATING IN SPACE

Darrell Newell

5. WARFIGHTER 1: AN AIR FORCE PARTNERSHIP WITH INDUSTRY TO ADVANCE SPACE IMAGING SPECTROSCOPY

Thomas Cooley, Ph.D.  
Lt. Col. Gary Seigel, USAF  
Maj. Ivan Thorsos, USAF  
Janic Olson  
Marko Stoyanof

6. WARFIGHTER 1: USER UTILITY ACTIVITIES

Lt. Col. Gary Seigel, USAF  
Thomas Cooley, Ph.D.  
David Bergeron  
Capt. Larry Haas, USAF  
Maj. Ivan Thorsos, USAF

7. WHY A UNITED STATES SPACE FORCE NOW

Capt. William O. Glascoe, III, USAF

**D. NEW HORIZONS IN EDUCATION**

**Howard Johnson Plaza-Hotel**

*Session Chairman:* Gregg Buckingham

*Session Organizer:* Tim Kotnour

1. VIRTUAL SCIENCE MENTOR

Donna Price Henry

2. FLORIDA SPACE GRANT CONSORTIUM

Humberto Campins  
Jaydeep Mukherjee

3. CLCS AS A CASE STUDY FOR HUMAN FACTORS EDUCATION

Marc Resnick  
Julie Jacko

4. INTERNET BASED TRAINING TO SUPPORT A CHANGING WORKFORCE

Randall Tilley

5. NASA/FLORIDA MINORITY INSTITUTION ENTREPRENEURIAL PARTNERSHIP

Ann Taylor, Ph.D.  
Irma Becerra-Fernandez, Ph.D.  
Doris Brown, Ph.D.  
Frank Kinney  
Abbas Entessari, Ph.D.

6. DEFINING PARTNERSHIP NEEDS FOR FLORIDA'S AEROSPACE/AVIATION INDUSTRY & THE STATE EDUCATIONAL SYSTEM

Tim Kotnour, Ph.D.

7. THE SPACE LIFE SCIENCES TRAINING PROGRAM, PREPARING FOR TOMORROW TODAY

Shannon Potter

8. PROJECT VISION

Gustavo A. Roig, Ph.D.  
Frederico Norwood, Ph.D.  
Irma Becerra-Fernandez, Ph.D.  
M. A. Ebadian  
David C. McCalla, Ph.D.  
Ana Maria Lopez, Ph.D.  
Lucy Puello-Capone, Ph.D.

**EXHIBITS (11:00 a.m. to 5:00 p.m.)**

**Cocoa Beach Hilton and Comfort Inn & Suite Resort**

**Science Fair  
Holiday Inn, Dolphin Room**

**HAB LAB Exhibit (9:00 a.m. to 8:00 p.m.)**

**Cocoa Beach Hilton**

**LUNCHEON (11:30 a.m. to 1:00 p.m.)**

Holiday Inn, Manatee Ballroom

*Introductions:* Bruce Melnick, General Chairman  
*Speaker:* Lt. General Lance W. Lord, USAF  
US Space Command  
Vice Commander Air Force Space Command

Lieutenant General Lance W. Lord is Vice Commander, Headquarters Air Force Space Command, Peterson Air Force Base, Colo.



The general entered the Air Force in 1969 as a graduate of the Otterbein College Reserve Officer Training Corps program. He completed a series of Air Staff and Department of Defense-level assignments in strategic missiles after serving four years of alert duty with the Minuteman II Intercontinental Ballistic Missile (ICBM) force. He has served as commandant of Squadron Officer School and directed the Ground Launched Cruise Missile Program Management Office in Europe. He represented the Air Force as a research associate in international security affairs with Ohio State University. Before assuming his current position, he was commander, 2nd Air Force, Keesler Air Force Base, Miss. During assignments in North Dakota and Wyoming, the general commanded missile wings operating the Minuteman III and Peacekeeper weapon systems. In California he commanded a space wing responsible for West Coast satellite launch and ballistic missile test launch operations. He also has served as director of plans at Headquarters Air Force Space Command. General Lord and his wife, Rebecca, have two sons.

**PANEL SESSION II (1:30 p.m. to 4:30 p.m.)**

**Howard Johnson Plaza-Hotel**

**“DOD—EXPLOITING SPACE FOR WORLD PEACE”**

*Panel Chairman:* Lt. General Lance W. Lord, USAF US Space Command Vice Commander, Air Force Space Command

*Panel Representatives are from the following organizations:*

45th Space Wing  
NASA  
FAA  
Spaceport Florida Authority

**EXHIBITS RECEPTION (6:00 p.m. to 8:00 p.m.)**

**Cocoa Beach Hilton and Comfort Inn & Suite Resort**

**Exhibit Hall, Cocoa Beach (TICKET REQUIRED)**

**THURSDAY, APRIL 30**

**PANEL SESSION III (8:00 a.m. to 11:00 a.m.)**

**Howard Johnson Plaza-Hotel**

**TO THE MOON AND MARS**

*Panel Chairman:* Dr. Michael D. Griffin, Executive Vice President  
Orbital Sciences Corporation

*Panel Members:*

Norm Haynes  
Dr. Richard Obermann  
Col. S. Peter Worden, USAF  
Dr. Robert Zubrin  
Dr. Wesley J. Huntress

**EXHIBITS (9:00 a.m. to 3:00 p.m.)**

**Cocoa Beach Hilton, Comfort Inn & Suite Resort**

**SCIENCE FAIR**

**Holiday Inn, Dolphin Room**

**HAB LAB Exhibit (9:00 a.m. to 3:00 p.m.)**

**Cocoa Beach Hilton**

**PAPER SESSION III (1:00 p.m. to 4:00 p.m.)**

**A. SPINOFFS FROM SPACE**

**Howard Johnson Plaza-Hotel**

*Session Chairman:* Dr. Robert Norwood  
Office of Chief Technologist, NASA Headquarters

*Session Organizer:* Chris Cook

1. AUTOMATED PRS ON WIRELESS NETWORKS  
Stephen M. Schneider  
Michael N. Clark
2. TECHNOLOGY TRANSFER: BRIDGING SPACE AND SOCIETY  
Orlando Melendez
3. DESIGN OF A PORTABLE DATA COLLECTION PROCEDURE SYSTEM FOR PROCESSING SPACE SHUTTLE PAYLOADS AND MAIN ENGINES AT THE KENNEDY SPACE CENTER  
Darcy Miller  
John Lekki  
Kevin Jackson  
Mike Kappel  
Loretta Moore
4. PROTOTYPE AEROGEL INSULATION FOR MELAMINE-FOAM SUBSTITUTE: CRITICAL SPACE STATION EXPRESS RACK TECHNOLOGY  
David Noever  
Laurent Sibille  
David D. Smith  
Raymond Cronise

5. LDAR, A THREE-DIMENSIONAL LIGHTNING WARNING SYSTEM: ITS DEVELOPMENT AND USE BY THE GOVERNMENT, AND TRANSITION TO PUBLIC AVAILABILITY

Stan Starr  
David Sharp  
John Madura  
Francis Merceret, Ph.D.  
Martin Murphy, Ph.D.

6. FLIGHT OPPORTUNITIES FOR COMMERCIAL UTILIZATION (SPACEHAB)

Dr. Bernard A. Harris

7. EELV DELTA IV LAUNCH OPS.

Dawn King  
William Erskine  
Thomas Alexiou

## **B. TECHNOLOGY DEVELOPMENT AND UTILIZATION IN SPACE Howard Johnson Plaza-Hotel**

*Session Chairman:* Tony Spear, Project Manager, Mars Pathfinder  
Jet Propulsion Laboratory

*Session Organizer:* Linda Bradley

1. ALKALI METAL THERMAL TO ELECTRIC CONVERTER TECHNOLOGY DEVELOPMENT FOR POTENTIAL DEEP SPACE SCIENTIFIC MISSIONS

Jack F. Mondt  
Robert K. Sievers

2. X2000: REVOLUTIONARY SYSTEMS FOR EXPLORATION OF THE OUTER PLANETS

David F. Woerner

3. COMMITTEE ON EARTH OBSERVATION SATELLITES (CEOS): REMOTE SENSING EDUCATION AND DEVELOPING COUNTRIES

Leslie B. Charles

4. PROSPECTS OF UTILIZATION OF THE SPACE-PURPOSE TEMPERATURE SENSORS FOR PUBLIC & COMMERCIAL USE

Yu. M. Shwarts  
E. F. Venger  
N. R. Kulish  
V. L. Borblik

5. THE 1998 MARS SURVEYOR LANDER AND ORBITER PROJECT  
Dr. John B. McNamee

6. COMMERCIAL PROVISION OF THE X-RAY CRYSTALLOGRAPHY FACILITY

William McDonald  
Lawrence DeLucas  
Michael E. Kearney  
Kenneth Jackson

7. SPACE-DRUMS CONTAINERLESS PROCESSING FACILITY FOR A MICROGRAVITY ENVIRONMENT

Dr. Jacques Yves Guigne  
E. A. Sloop

J. A. Schultz  
S. V. Koptendo

8. COMMERCIAL ACCESS TO THE EXTERNAL SPACE ENVIRONMENT

Michael Kearney  
Phil Mongan

9. OVERVIEW OF THE ORBITING RADIO COMMUNICATION ASSET (ORCA) MISSION

William J. Byrd  
Robert Stemowski  
Darby G. Cooper

10. A ROADMAP FOR SPACE MICROELECTRONICS TECHNOLOGY INTO THE NEW MILLENNIUM

Dr. Leon Alkalai

11. THE APPRAISAL OF WEATHER SATELLITE IMAGES/RADAR DATA FOR THE INTENSE METEOROLOGICAL SYSTEMS OVER PAKISTAN BOTH IN SUMMER & WINTER

M. Amjed Siddique Almas  
Syed Amer Mahmood

12. REMOTE SENSING TECH FOR VEGETATION & SOIL SALINITY

M. Amjed Siddique Almas  
Mohammed Ali  
Rizwan Shahid  
Kashif Reban  
M. Khalid

## **C. SPACE TECHNOLOGY—DEVELOPMENTS FROM THE MILITARY Howard Johnson Plaza-Hotel**

*Session Chairman:* James C. Hobin, General Manager, Launch Base Support Project, Johnson Controls, Inc.

*Session Organizer:* Duncan McCulloch

1. EELV/DELTA IV PROGRAM LAUNCH OPERATIONS & FACILITIES

Thomas G. Alexiou  
William D. Erskine  
Dawn Marie King

2. EASTERN RANGE TO DATE EXPERIENCES WITH TDRSS AND POTENTIAL FUTURE USES

Chris Bocchino  
William Hamilton

3. DEVELOPMENT OF DUAL USE LAUNCH FACILITIES ON A NATIONAL RANGE

Robert M. Storlaz  
Doug Burnett

4. TDRSS EXPERIENCES IN THE ATLAS CENTAUR PROGRAM

J. P. Stroud

5. **ADVANCED MECHANISMS FOR SPACE APPLICATIONS**

Eugene R. Fosness  
Richard Madison  
Dino Sciulli  
David B. Founds

**D. SPACE BENEFITS FOR FUTURE GENERATIONS**

**Howard Johnson Plaza-Hotel**

*Session Chairman:* Phil Rose, Instructional Services Division, School Board of Brevard County

*Session Organizer:* Cindy Coddington

1. **THE EFFECTS OF HYDROPHILIC & HYDROPHOBIC COATINGS AND CONTAINER SHAPE ON FLUIDS & CONTAINERS IN A MICROGRAVITY ENVIRONMENT**

Robert S. Ward  
David Swanson  
Sarah Oswald  
Brandon Cangiano  
Maryanne Murray

2. **TRIALS, TRANSFORMATIONS, AND TRIUMPHS: THE SPACE PROGRAM'S PAST, PRESENT, AND FUTURE IMPACT ON SOCIETY**

Melissa Kullik

3. **ATTAINING SPACE BENEFITS FOR OUR GENERATION**

Tony DeTora

4. **THE COLLABORATIVE UKRAINIAN EXPERIMENT**

Peter V. Chetirkin  
Thomas W. Dreschel  
Volodimir Nazarenko  
Paul Williams

5. **HUBBLE DISCOVERIES: CREATING THE NEXT GENERATION OF SCIENTISTS**

Tom Devlin

**SPACE CONGRESS RECEPTION (6:00 p.m. to 8:00 p.m.)**

Holiday Inn Observation Deck

**PANEL SESSION IV (7:00 p.m. to 9:00 p.m.)**

Howard Johnson Plaza-Hotel

**MEET THE ASTRONAUTS**

*Panel Chairman:* Loren Shriver, Deputy Director for Launch & Payload Processing, NASA, Kennedy Space Center, FL

*Astronauts:* As available between training commitments.

**FRIDAY, MAY 1**

**PANEL SESSION V (8:00 a.m. to 11:00 a.m.)**

Howard Johnson Plaza-Hotel

**COMMERCIALIZATION**

*Panel Chairman:* Mike Hawes, Deputy Director of Space Station Requirements

*Panel Members:*

John Higginbotham  
Shelley A. Harrison  
Edward O'Conner, Jr.  
Ralph N. Moslener

**SPACE CONGRESS GOLF TOURNAMENT**

**(11:30 a.m. to 6:00 p.m.) (Approximately)**

Patrick AFB Golf Course

*Buffet Lunch:* 11:30 a.m.

*Shotgun Start:* 1:00 p.m.

Map available at registration desk.

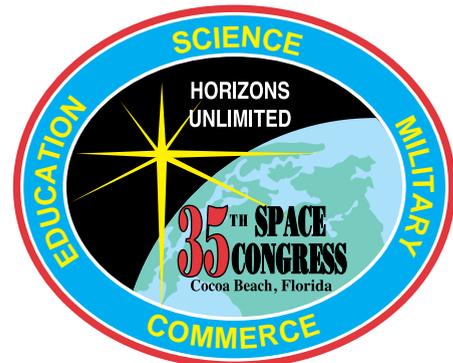
**MISSILE, SPACE & RANGE PIONEERS' ANNUAL BANQUET**

Patrick AFB, Officers' Club

*Social Hour:* 6:30

*Dinner:* 7:30

*Speaker:* 8:30 - Richard K. Jacobson  
Former CEO & Chairman  
Spacehab, Inc.



# PROGRAM SUMMARY

## MONDAY, APRIL 27

*12:00 noon to 5:00 p.m.*

**REGISTRATION DESK OPEN**, Howard Johnson Plaza-Hotel

## TUESDAY, APRIL 28

*7:00 a.m. to 5:00 p.m.*

**REGISTRATION DESK OPEN**, Howard Johnson Plaza-Hotel

*8:00 a.m.*

**KEYNOTE ADDRESS**

Howard Johnson Plaza-Hotel

*8:30 a.m. to 11:00 a.m.*

**PANEL SESSION I: VISION OF SPACE STATION OPERATIONS AND UTILIZATION**

Howard Johnson Plaza-Hotel

*11:00 a.m. to 7:00 p.m.*

**EXHIBITS**, Cocoa Beach Hilton, Comfort Inn & Suite Resort

**SCIENCE FAIR**, Holiday Inn, Dolphin Room

*(9:00 a.m. to 7:00 p.m.)*

**HAB LAB Exhibit**, Cocoa Beach Hilton

*11:30 a.m. to 1:00 p.m.*

**LUNCHEON**, Holiday Inn, Manatee Ballroom

*2:00 p.m. to 5:00 p.m.*

**PAPER SESSION I:**

- A. SCIENTIFIC ENLIGHTENMENT, Howard Johnson Plaza-Hotel
- B. SPACE STATION/MIR REPORT, Howard Johnson Plaza-Hotel
- C. DOD ACHIEVEMENTS, Howard Johnson Plaza-Hotel
- D. LEARNING FROM EXPERIENCE, Howard Johnson Plaza-Hotel

*7:00 p.m.*

**BANQUET**, Radisson at the Port

## WEDNESDAY, APRIL 29

*7:00 a.m. to 5:00 p.m.*

**REGISTRATION DESK OPEN**, Howard Johnson Plaza-Hotel

*8:00 a.m. to 11:00 a.m.*

**PAPER SESSION II:**

- A. CURRENT AND FUTURE LAUNCH CAPABILITIES, Howard Johnson Plaza-Hotel
- B. NASA—ASSESSING PROGRESS, Howard Johnson Plaza-Hotel
- C. FUTURE ENDEAVORS FOR MILITARY SPACE, Howard Johnson Plaza-Hotel
- D. NEW HORIZONS IN EDUCATION, Howard Johnson Plaza-Hotel

*1:00 a.m. to 5:00 p.m.*

**EXHIBITS**, Cocoa Beach Hilton, Comfort Inn & Suite Resort

**SCIENCE FAIR**, Holiday Inn, Dolphin Room

*(9:00 a.m. to 8:00 p.m.)*

**HAB LAB Exhibit**, Cocoa Beach Hilton

*11:30 a.m. to 1:00 p.m.*

**LUNCHEON**, Holiday Inn, Manatee Ballroom

*1:30 p.m. to 4:30 p.m.*

**PANEL SESSION II: DOD—EXPLOITING SPACE FOR WORLD PEACE**

Howard Johnson Plaza-Hotel

*6:00 p.m. to 8:00 p.m.*

**EXHIBIT RECEPTION (TICKET REQUIRED)**

Cocoa Beach Hilton, Comfort Inn & Suite Resort Exhibit Halls

## THURSDAY, APRIL 30

*7:00 a.m. to 5:00 p.m.*

**REGISTRATION DESK OPEN**, Howard Johnson Plaza-Hotel

*8:00 a.m. 11:00 a.m.*

**PANEL SESSION III: TO THE MOON AND MARS**

Howard Johnson Plaza-Hotel

*9:00 a.m. to 3:00 p.m.*

**EXHIBITS**, Cocoa Beach Hilton, Comfort Inn & Suite Resort

**SCIENCE FAIR**, Holiday Inn, Dolphin Room

*(9:00 a.m. to 3:00 p.m.)*

**HAB LAB Exhibit**, Cocoa Beach Hilton

*1:00 p.m. to 4:00 p.m.*

**PAPER SESSION III:**

- A. SPINOFFS FROM SPACE, Howard Johnson Plaza-Hotel
- B. TECHNOLOGY DEVELOPMENT AND UTILIZATION IN SPACE, Howard Johnson Plaza-Hotel
- C. SPACE TECHNOLOGY—DEVELOPMENTS FROM THE MILITARY, Howard Johnson Plaza-Hotel
- D. SPACE BENEFITS FOR FUTURE GENERATIONS, Howard Johnson Plaza-Hotel

*6:00 p.m. to 8:00 p.m.*

**SPACE CONGRESS RECEPTION**, Holiday Inn Observation Deck

*7:00 p.m. to 9:00 p.m.*

**PANEL SESSION IV: MEET THE ASTRONAUTS**, Howard Johnson Plaza-Hotel

## FRIDAY, MAY 1

*7:00 a.m. to 12:00 noon*

**REGISTRATION DESK OPEN**, Howard Johnson Plaza-Hotel

*8:00 a.m. to 11:00 a.m.*

**PANEL SESSION V: COMMERCIALIZATION**

Howard Johnson Plaza-Hotel

*11:30 a.m. to 5:30 p.m.*

**SPACE CONGRESS GOLF TOURNAMENT**, Patrick AFB, Golf Course

*6:30 p.m. to 10:00 p.m.*

**MISSILE, SPACE & RANGE PIONEERS' ANNUAL BANQUET**, Patrick AFB, Officers' Club

## **ACKNOWLEDGMENTS**

The **Thirty-Fifth Space Congress** gratefully acknowledges the special support of the following organizations:

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City Officials of Cocoa Beach and Cape Canaveral and especially the  
Cocoa Beach Police Department

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